Space Weather Forecast

Issued on Monday, 08 August 2022 at 00:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor or moderate geomagnetic storm intervals, Days 1 and 2 (8 and 9 Aug).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Very Low over the past 24 hours with no significant flares until 07/2306UTC when a couple of common class flares were observed. There are currently eight sunspot regions on the visible disc, including three regions very close to the southwest limb, two small unipolar regions in the southeast quadrant, along with a new unipolar region, and two further regions which have recently rotated onto the northeast limb. All of these are small and simple with no significant magnetic complexity. No Earth-directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The solar wind has shown a transition into a high speed stream with elevated levels now observed at just under 600 km/s. At the start of the day on Sunday solar winds were around 330 km/s and have since risen steadily through the day. The total interplanetary magnetic field was at mostly moderate levels. The important northwards/southwards direction was moderate and often southward directed Geomagnetic activity was Quiet to Unsettled becoming active for most of the second half of the day, and a minor geomagnetic storm interval to end the day.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low or very low solar activity is forecast with only a slight chance (5%) of an isolated Moderate-class flare.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Solar winds are forecast to be elevated to fast due to high speed streams related to a couple of coronal holes and the most notable feature is a large coronal hole with a likely fast wind arrival on Day 1 (8 Aug), but possibly into Day 2 (9 Aug).
Geomagnetic activity will be Unsettled to Active with an increasing chance of minor or moderate geomagnetic storms intervals on Days 1 and 2 (8 and 9 Aug) due to the fast solar wind regime affecting Earth. Geomagnetic activity becoming Quiet to Unsettled from Day 3 (10 Aug).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	80	50	5	1
Strong	G3	No	40	10	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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